

**AMENDMENT TO THE CLAIMS**

*Please amend the claims as follows:*

1. (Currently amended) A radio communications system comprising:  
  
a first antenna [(20)] having a directivity electrically switchable;  
  
a second antenna [(11)]; and  
  
first and second radio devices (~~30, 10~~) mutually transmitting and receiving a radio wave through a radio transmission path via said first and second antennas (~~20, 11~~), wherein:  
  
said first radio device [(30)] receives a radio wave or waves from said second radio device [(10)] while changing a directivity of said first antenna [(20)] with prescribed patterns to form a plurality of directivities, generates a first receive signal profile indicative of a strength profile of a plurality of radio waves received with the respective ones of the directivities, and generates a first private key [(Ks2)] based on the generated first receive signal profile; and  
  
said second radio device [(10)] receives a radio wave or waves from said first radio device [(30)] while changing a directivity of said first antenna [(20)] with prescribed patterns to form a plurality of directivities, generates a second receive signal profile indicative of a strength profile of a plurality of radio waves received with the respective ones of the directivities, and generates a second private key [(Ks1)] identical to said first private key [(Ks2)] based on the generated second receive signal profile.
  
2. (Currently amended) The radio communications system of claim 1, wherein:  
  
said first and second receive signal profiles are each formed of a plurality of strength of a plurality of radio waves corresponding to said plurality of directivities; and

said first and second radio devices (~~30, 10~~) ~~multivalue~~ quantize said plurality of strength to generate said first and second private keys (~~Ks2, Ks1~~), respectively.

3. (Currently amended) The radio communications system of claim 1, wherein said first and second radio devices (~~30, 10~~) transmit and receive said plurality of radio waves in a time division duplex system.

4. (Currently amended) The radio communications system of claim 1, wherein said first radio device  $[(30)]$  verifies that said first private key  $[(Ks2)]$  generated matches said second private key  $[(Ks1)]$ .

5. (Currently amended) A radio communications system comprising:  
a first antenna  $[(20)]$  having a directivity electrically switchable;  
a second antenna  $[(11)]$ ; and  
first and second radio devices (~~30A, 10A~~) mutually transmitting and receiving a radio wave through a radio transmission path via said first and second antennas (~~20, 11~~), wherein:  
said first radio device  $[(30A)]$  receives a radio wave or waves corresponding to a plurality of data transmitted by said second radio device  $[(10A)]$  in accordance with a prescribed communications protocol while changing a directivity of said first antenna  $[(20)]$  with prescribed patterns to form a plurality of directivities, generates a first receive signal profile indicative of a strength profile of a plurality of radio waves received with the respective ones of the directivities, and generates a first private key  $[(Ks2)]$  based on the generated first receive signal profile; and

said second radio device [(10A)] receives a radio wave or waves corresponding to a plurality of data transmitted by said first radio device [(30A)] in accordance with a prescribed communications protocol while changing a directivity of said first antenna [(20)] with prescribed patterns to form a plurality of directivities, generates a second receive signal profile indicative of a strength profile of a plurality of radio waves received with the respective ones of the directivities, and generates a second private key [(Ks1)] identical to said first private key [(Ks2)] based on the generated second receive signal profile.

6. (Currently amended) The radio communications system of claim 5, wherein when said first radio device [(30A)] has said first antenna [(20)] controlled to be omnidirectional said first radio device [(30A)] establishes said radio transmission path between said first radio device [(30A)] and said second radio device [(10A)] and thereafter said first radio device [(30A)] has said first antenna [(20)] changing the directivity to form said plurality of directivities, while said first radio device [(30A)] communicates said plurality of data with said second radio device [(10A)].

7. (Currently amended) The radio communications system of claim 6, wherein when said first radio device [(30A)] communicates each of said data with said second radio device [(10A)], said first radio device [(30A)] updates a directivity of said first antenna (20) to receive said data from said second radio device [(10A)] and maintains said updated directivity of said first antenna [(20)] to transmit said received data to said second radio device [(10A)].

8. (Original) The radio communications system of claim 6, wherein:  
said prescribed communications protocol is formed of a plurality of hierarchical layers;  
said plurality of data are included in a data format in a hierarchical layer of said plurality of hierarchical layers converting said data to said electrical signal; and  
said hierarchical layer converting said data to said electrical signal is common to a plurality of communications protocols.

9. (Currently amended) The radio communications system of claim 5, wherein said plurality of data are each formed of a section detecting a strength of a radio wave received from said first and second radio devices (~~30A, 10A~~) and a section changing the directivity of said first antenna ~~[(20)]~~.

10. (Currently amended) The radio communications system of any one of claims ~~[[1-9]]~~ 1-3 or 5-9, wherein when said first private key ~~[[Ks2)]]~~ generated does not match said second private key ~~[[Ks1)]]~~, said first radio device (~~30, 30A~~) matches said first private key (Ks2) to said second private key ~~[[Ks1)]]~~.

11. (Currently amended) The radio communications system of any one of claims 1-9, wherein said first antenna ~~[(20)]~~ is provided for said first radio device (~~30, 30A~~) arranged adjacent to a terminal ~~[(50)]~~ of an eavesdropper.

12. (Currently amended) The radio communications system of any one of claims 1-9, wherein said first and second radio devices (~~30, 30A, 10, 10A~~) employ said first and second private keys (~~K<sub>s2</sub>, K<sub>s1</sub>~~) to encrypt and decrypt data, and communicate said data.